

## Instructions

51-HSA2

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Selector Switch Operator  
For Type 3, 4, 7 & 9 Enclosures  
Class 14, 18, 22, 40 & 51  
Cat No 51SB2

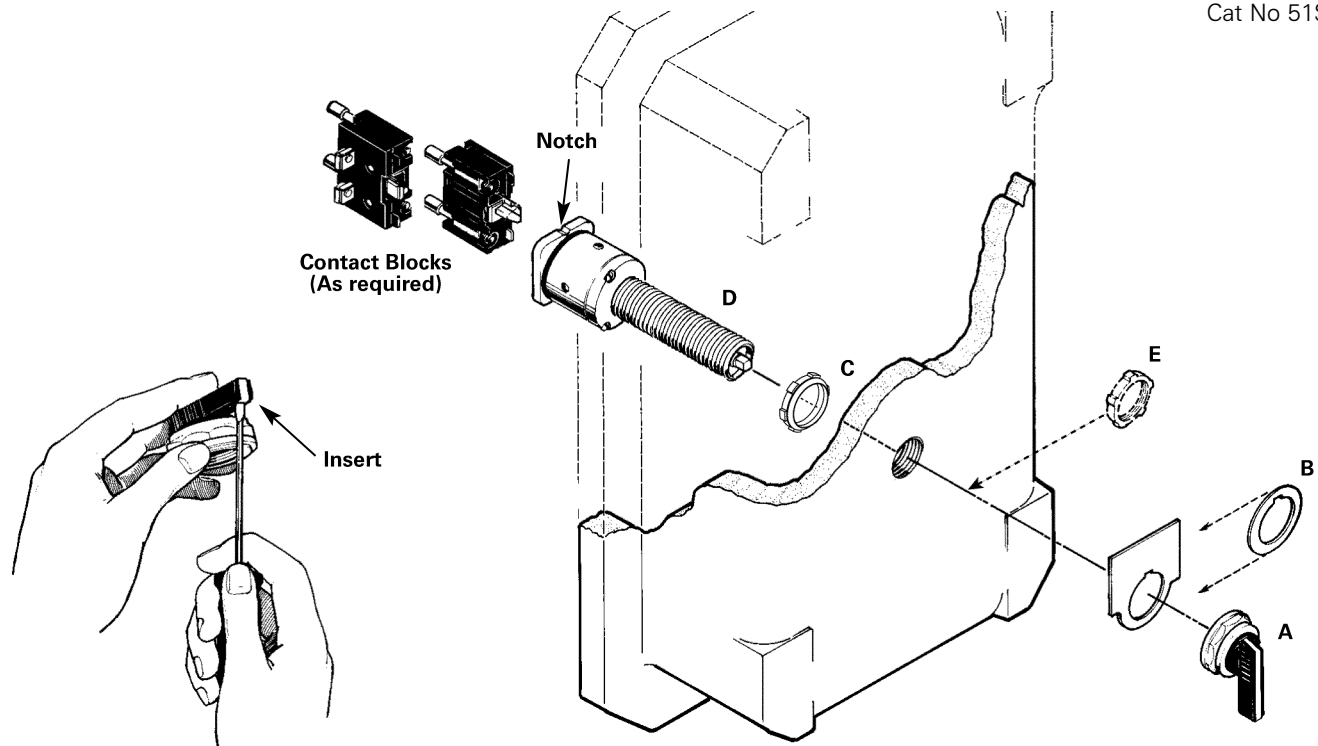


Figure 1

### DESCRIPTION

Class 51 selector switch operators are available in 2-position or 3-position models with positive detent indexing (maintained) or spring return indexing (momentary.) They are available with short or long operating levers which have white inserts. These white inserts can be replaced with inserts of another color by the user. The 2-position selector switch model has a single standard cam, while the 3-position model provides a choice of five different cams offering a wide selection of contact arrangements. All operators accommodate the mounting of Furnas brand Class 52 contact blocks.

Selector switch operators are available in two bushing lengths, short and long. The short bushing is for use on an enclosure cover, with maximum thickness of  $\frac{7}{8}$  inch. The long bushing can be used on a standard enclosure with an additional front panel or on a very thick enclosure ( $2\frac{1}{8}$  inch maximum cover thickness.) A sealing lock nut and an octagonal lock nut secure the bushing in position. For long bushing installation in an enclosure and panel, an additional lock nut secures the bushing behind the panel.

**Use with Type 3, 4, 7, 9 enclosures. When used in a Type 3 or 4 enclosure, mount on a flat surface.**

**Contents of kits** with catalog number beginning with 51SA2 and 51SB2:


- 1 **A** octagonal lock nut with lever
- 1 **B** trim washer
- 1 **C** sealing lock nut
- 1 **D** selector switch assembly
- 1 **E** plain lock nut for long bushing kits only

	<h3>WARNING</h3>
	<p><b>Hazardous voltage.</b> Can cause death, serious personal injury, or property damage.</p> <p>Disconnect power before working on this equipment.</p>

### CONTACT BLOCK INSTALLATION

The contact blocks can be attached before or after installing the selector switch operator. Mounting the contact blocks first avoids the problem of limited access in an enclosure. Refer to the section titled "Mounting Contact Blocks" on this instruction sheet.

(For Engineering Reference Only - Rev. D)

	<b>⚠ WARNING</b>
	<p><b>Hazardous voltage.</b>  <b>Can cause death, serious personal injury, or property damage.</b></p> <p>Maintain 1/2 inch minimum clearance through air between uninsulated live parts, such as contact block terminals, and enclosure.</p>

**BUSHING INSTALLATION**

1. Mount operators on 2<sup>1</sup>/<sub>4</sub> inch minimum centers.
2. On the enclosure panel or cover, drill and tap a 3/4 14NPSM-2A hole for each operator. The thickness of the enclosure panel must allow a 5-thread minimum engagement with the bushing.
3. For operators mounted near the edge of the enclosure panel, be sure to maintain 1/2 inch minimum air clearance between contact block terminals and enclosure wall.
4. Remove octagonal lock nut **A** and trim washer **B** from the assembly **D**. If a different color lever inset is required, pry out white insert with small screwdriver as shown in Figure 1. Snap in new color insert.
5. Move sealing lock nut **C** to the rear of the bushing.
6. From inside the enclosure, install assembly **D** through a 3/4 inch 14NPSM tapped hole until the front of the bushing projects 5 or 6 threads from the front surface of the enclosure. Position the assembly with the notched edge of the square cam housing facing up as shown in Figure 1.
7. Place trim washer **B**, or the legend plate (optional), and lock nut **A** on the projecting bushing.

**Note:** When the legend plate is used, discard trim washer **B**.

8. Assemble lock nut **A** with lever to assembly **D**, observing the following.
  - a. Start threading lock nut **A** onto the bushing. The lever is free to rotate in the lock nut initially (approximately 3 turns) until the square hole in the lever starts to engage the selector shaft.
  - b. After the lever and shaft engage, continue turning lock nut **A** but do not tighten.
  - c. Operate the lever to determine if the lever positions are as required or match with the legend plate.
  - d. If lever positions are not as required, operate lever to the CCW position for a 2-position switch or to the middle position for a 3-position switch. Back the lock nut up until the lever disengages the shaft. While again assembling lock nut **A**, hold the lever in the proper position: approximately 55° left of vertical for the 2-position switch; vertical for the 3-position switch. After lock nut is assembled, check lever positions and repeat assembly if required.
  - e. With lever correctly assembled, align the legend plate and tighten lock nut **A** securely.

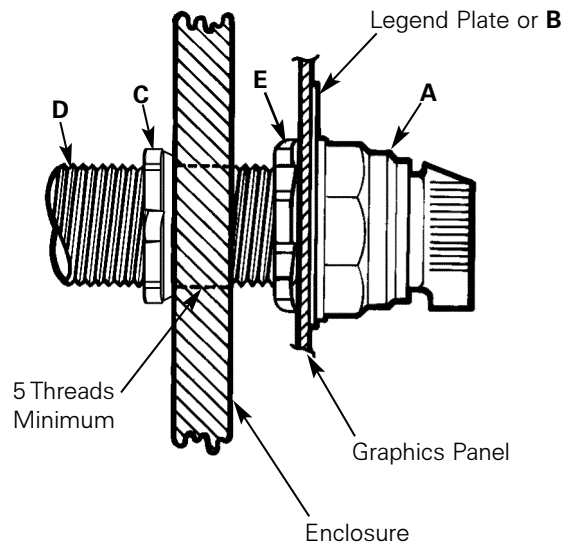
9. To secure the operator in position, tighten the sealing lock nut **C** securely against the enclosure.

Using wrench catalog number 52MAWA or 52MAWB facilitates assembly and prevents scoring of the octagonal lock nut **A**; however, neither tool is required for installation.

When the long bushing operator is used on a very thick enclosure, follow the instructions for short bushing installation, discarding plain lock nut **E**.

For an enclosure with panel mounting, observe the following mounting dimensions:

1. On the graphics panel, drill a 1<sup>1</sup>/<sub>32</sub> inch diameter minimum clearance hole in line with the tapped hole for each operator.
2. When installing assembly **D**, include lock nut **E** and front panel as shown in Figure 2.



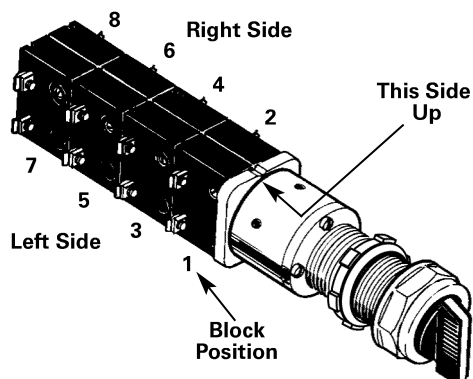
**Figure 2**

**MOUNTING CONTACT BLOCKS**

From 1 to 4 Furnas brand Class 52 contact block (NEMA A600 rating) can be used with the 3-position spring return operator; arrange blocks not to exceed two levels. All other selector switch operators can accept up to eight contact blocks each; arrange blocks not to exceed four levels. Check enclosure depth for adequate space and the 1/2 inch air clearance noted in the **warning label** on page 2.

Observe the following to determine the contact block mounting location. In the catalog number of the selector switch operator, the sixth character (A, B, etc.) identifies the cam with which the operator is equipped. For example, operator 51SA2CA has a C cam.

1. Refer to the "Cam Letter" column heading in the appropriate table and locate the cam.
2. Select the contact operation (X indicates contacts closed required for each lever position.
- 3 Assemble contact blocks on the side of the operator (see Figure 3) indicated in the "Contact Block Location" column and in the accordance with the contact arrangement desired.



**2-Position Selector Switch Contact Functions**

Cam Letter	Lever Position for Contact Function		Contact Block	
	Left	Right	Location	Catalog Number
A	X	O	L or R	52BAJ
	O	X	L or R	52BAK

**3-Position Selector Switch Contact Functions**

Cam Letter	Lever Position for Contact Function			Contact Block	
	Left	Center	Right	Location	Catalog Number
B	X	O	O	R	52BAK
	O	O	X	L	52BAK
	X	X	O	L	52BAJ
	O	X	X	R	52BAJ
C	X	O	O	L or R	52BAJ
	O	O	X	L or R	52BAK
D	O	X	O	L or R	52BAJ
	O	O	X	L or R	52BAK
E	X	O	O	L or R	52BAK
	O	X	O	L or R	52BAJ
G	X	O	O	L	52BAJ
	O	X	O	R	52BAJ
	O	O	X	L or R	52BAK

**Legend: Slanted lines represent lever position.**

- x -- Contact Closed
- o -- Contact Open
- 52BAJ -- Normally Open
- 52BAK -- Normally Closed
- L -- Left Side -- Figure 3
- R -- Right Side